4. SUMMARY OF COORDINATION, PUBLIC COMMENTS

4.1 PROJECT HISTORY

The following provides a chronological review of the Mill Creek Project and events that have led to the reanalysis of the GRR effort and the project:

- 1959 – Severe flooding occurred in the Mill Creek watershed.
- 1962 – The MVCD was created to represent public corporations in the watershed.
- 1962-1970 – USACE performed reconnaissance and feasibility studies.
- 1970 – The project was authorized by the Flood Control Act of 1970 (PL 91-611). The project would provide a 1% chance event level of flood protection and consisted of 17.5 miles of channel modifications that included widening, deepening, and realigning the creek, constructing two miles of levees and three pumping stations, modifying highway and railroad bridges, adding two pumping units at the existing Mill Creek Barrier Dam, and including various recreational features along the mainstem of Mill Creek in Hamilton County.
- 1975 – A LCA was executed with the MVCD to construct the authorized project.
- 1975 – The GDM was completed, providing detailed design information on the project and dividing the project into eight sections (see Figure 4.1.1). Two of the sections were subdivided at a later date for a total of 11 sections.
- 1975 – An Agreement for Recreation Development was executed with the MVCD.
- 1976-1980 – Detailed design continued, and real estate acquisition by MVCD was underway.
- 1981 – Construction of Section 7A was initiated. The channel grade was left approximately three feet above the final grade in an effort to reduce flooding downstream. Final excavation of this section was to be done along with a cleanup of the entire channel after all other channel sections were completed.
- 1983, March – Construction of Section 3 was initiated and construction of Section 7A was completed.
- 1984, June – Construction of Section 2 was initiated. Completion of this section was delayed due to a slide that occurred during construction along I-75 and Ludlow Avenue.
- 1984 – Construction of Section 3 was completed.
- 1986, May – Construction of Section 4A was initiated.
- 1986, December – A contract was awarded to install two additional pumps at the Barrier Dam.
- 1988, November – A separate contract was awarded for repair of the slide in Section 2.
- 1989, August – Construction of Section 1 was initiated.
- 1989, December – Construction of Section 4A was completed; construction of Section 2 and the slide repair were completed.
- 1991, August – Completion of a Master Plan for the recreation features.
- 1991 – Installation of the two pumps at Barrier Dam was completed.

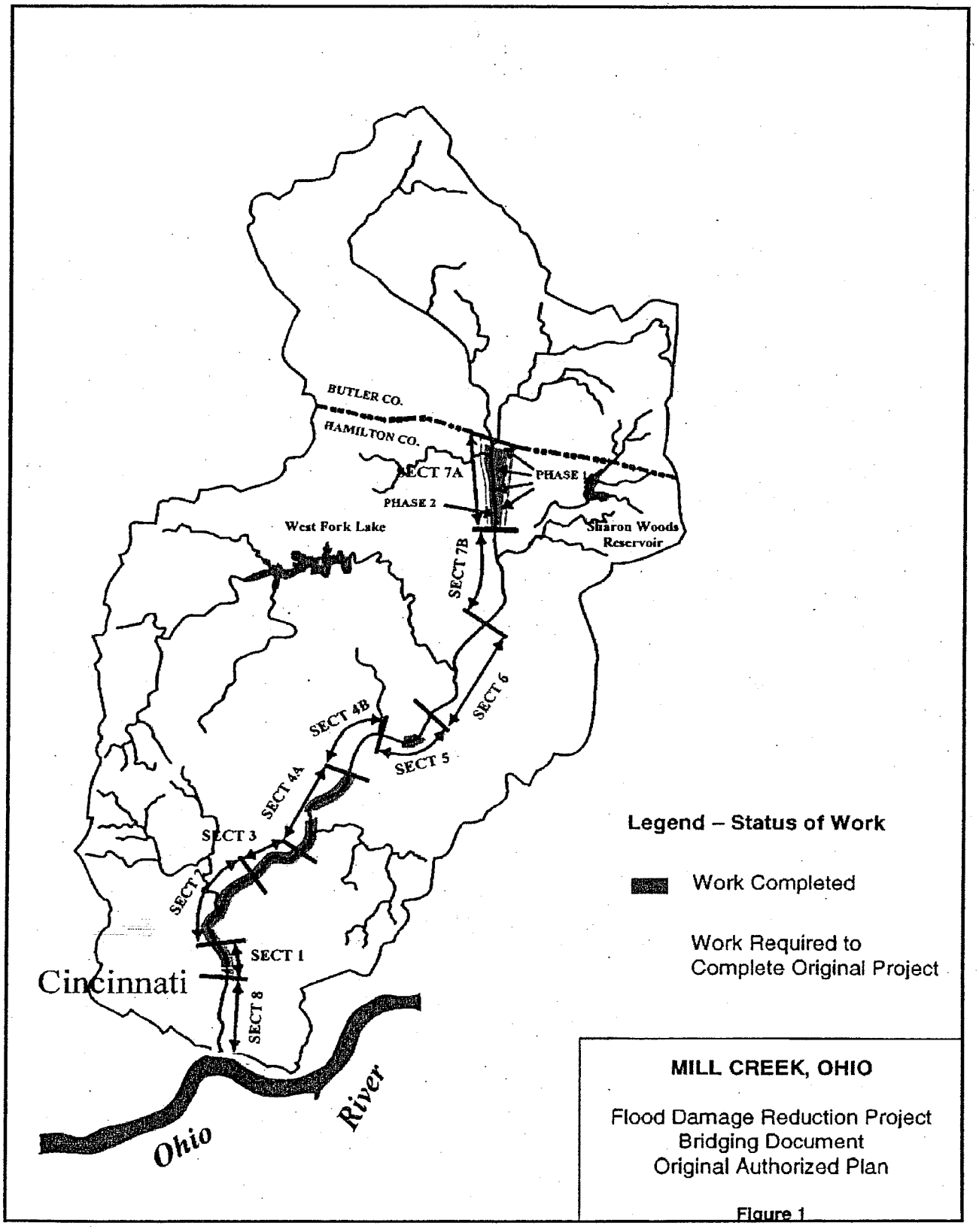

Figure 4.1.1. Mill Creek Channel Sections

- 1991 – All design efforts and future project construction were suspended at the direction of the Assistant Secretary of the Army (Civil Works) based on an August 1991 report prepared by Robert G. Eiland.[1] All ongoing construction work was allowed to continue to completion.
- 1993, December – Construction of Section 1 was completed.
- 1994 – A plan of study was developed for a GRR.
- 1995-1996 – Negotiations with the MVCD for the GRR were tied to reaching an agreement on the operation, maintenance, and turnover of the completed sections. Terms of the agreements could not be settled with the MVCD.
- 1996 – USACE Civil Works Directorate determined that the Louisville District should proceed with a Termination Study instead of a GRR.
- 1996-1997 – The MVCD conveyed its acceptance of O&M responsibilities to USACE, and terms of the agreements were settled.
- 1997, June – An Economic Analysis Summary, including flood damage estimates, existing levee analysis, and annual benefits calculations, was completed by the Louisville District.
- 1998 – A Contributed Funds Agreement for the GRR was executed in August with the MVCD, City of Cincinnati, and the Village of Evendale, and the GRR was initiated.
- 1998, August – An agreement for the restoration, O&M, and turnover of the completed sections was executed with the MVCD.
- 1999, October – The Louisville District determined that additional funding and time would be needed to complete the GRR as described in the approved PSP.
- 1999, December – The Louisville District met informally with the Great Lakes and Ohio River Division staff to discuss formulation methods.
- 2000, February – The Louisville District held a Special Project Review Board meeting to outline strategy to complete the GRR and to obtain District consensus.
- 2000, April – The Louisville District held an IPR meeting with the Great Lakes and Ohio River Division to present a plan for completion of the GRR and the restoration of the completed sections.
- 2000, May – The Great Lakes and Ohio River Division Counsel prepared a document that set forth many questions and concerns about this project since 1991.
- 2000, July – The Louisville District submitted a Schedule and Cost Change Request (SACCR) for completion of the GRR and the restoration of the completed sections.
- 2000, August – A meeting was held between the Louisville District and the Great Lakes and Ohio River Division staff to decide on the way to proceed. It was decided to prepare a Bridging Document, which would include both the Louisville District's recommendation for completion of the GRR and public opinion about an acceptable flood damage reduction project.
- 2000, September – Questions from the document prepared by the Great Lakes and Ohio River Division counsel were formalized and received by the Louisville District.
- 2000, November and December – Visioning Sessions were held with the communities and stakeholder agencies to solicit public input on future development of the Mill Creek basin.
- 2001, June – The Bridging Document was published.
- 2001, November – Review memos on the Bridging Document were received from members of the CELRL Internal Review Team and HQ-USACE . Memos recommended replacing the old Memo of Agreement with MVCD with a design agreement specifying 75% federal and 25% non-federal cost sharing, consistent with current USACE policy. Memos also specified

[1] Robert G. Eiland was a consultant for the Assistant Secretary of the Army (Civil Works) in 1991. He was tasked with performing an independent review of the Mill Creek Project for the Army.

that a wide array of both structural and non-structural alternatives to solve flood damage and other problems be addressed in the GRR.

- 2001, November through 2002, February – Negotiation began with HQ-USACE on appropriate steps to complete the GRR and on a list of alternatives to be documented in the GRR report. It was decided on February 12, 2002, at a meeting between Skip Fach (HQ-USACE Planning), Harry Simpson (CELRD), and representatives of CELRL, MSD, and the MVCD that an acceptable study plan would involve a four-stage effort: (1) initial screening of alternatives; (2) optimization of selected alternatives; (3) final detailed studies, including Micro Computer-Aided Cost Engineering System (M-CACES) and report preparation; and (4) final coordination.
- 2002, April – Letter from Assistant Secretary of the Army (Civil Works) with guidance on cost sharing for completion of the GRR (Appendix I).
- 2002, June. Revised Working-DRAFT PMP completed outlining 4-Stage process to complete the GRR.
- 2002, October. PMP published and signed by team and Sponsor.
- 2003, March. Stage 1 computations completed for initial screening of nine With-Project plans.

4.2 PUBLIC VIEWS AND COMMENTS

4.2.1 History – Pre-1998

Community sentiment to the Mill Creek Project has varied throughout the years. Initially, the community supported any plan that would provide protection from, and eliminate loss and damage due to rising floodwaters. Flooding has been a chronic problem on Mill Creek since 1897. Combining flood relief with anticipated recreational enhancements, the community remained supportive and participated as a financial partner (LCAs of 1970). The community's support wavered as the times and concerns of the citizens changed and costs began to increase.

Work on Mill Creek was incomplete and construction ceased in 1991. The public was left with a partially completed, unmaintained channel that offered 50% flood protection in 43% of the area and few recreational improvements or environmentally rebuilt habitats.

4.2.2 Current

Numerous community groups have raised concerns about the impact of completing the Mill Creek Project as authorized. Some concerns voiced were (1) what type of environmental impacts will occur, (2) what considerations will be given to recreational areas, (3) what will be the visual impact to the neighborhoods and, (4) what impacts will occur to the aquatic life along the creek. There is a strong desire to restore water quality, habitat value and recreation access along the Creek.

The tunnel alternative has engendered a great deal of community support. This is based on a perception that a tunnel would provide 1% chance level of flood protection; bypass known and potential hazardous, toxic, and radioactive waste (HTRW) sites; eliminate environmental impact that could be caused by the construction of levees, floodwalls, and channel modification;

prevent sewer backup; and allow treatment of the CSO which now flow directly into Mill Creek on a regular basis following ordinary week-to-week rain events.

4.2.3 Visioning Sessions

In August 2000, as a result of the revised PSP submitted in the July 2000 SACCR, a Project Review Meeting was held with the Great Lakes and Ohio River Division. Discussions during this meeting revealed that the plan being considered did not have full community support, and the stakeholders may not agree on a resolution to problems associated with Mill Creek. Prior to proceeding with the GRR study, the decision was made to seek more input from the community to gauge the limits of a supportable project.

The MCWC conducted the Mill Creek Vision Open House on November 9, 2000 to inform the public of the upcoming visioning sessions and to solicit their input. Appendix II provides the summary report of these meetings. Since the Visioning Sessions, virtually all community interests have supported a multi-purpose tunnel that would serve both water quality (reduction of CSOs) and flood-damage reduction purposes. It may be the only alternative that would be acceptable based on all four USACE's criteria and that also has widespread local stakeholder support.

5. EXISTING CONDITIONS

5.1 DEFINITION OF STUDY AREA

The study area is located in Hamilton County in southwest Ohio. Mill Creek flows from the southeastern part of Butler County in a southerly direction across Hamilton County and through the City of Cincinnati to its confluence with the Ohio River at approximately river mile 472.5. The total fall in elevation of the channel from the headwaters of Mill Creek to the mouth, over a distance of approximately 28 stream miles, is about 250 feet, with an average gradient of 8.9 feet per mile. Refer to Figure 1.1.1 for a general overview map of the study area and to Appendix VI for more detailed mapping.

The Mill Creek basin, has a total drainage area of about 159 square miles and lies in Southwest Ohio is generally bounded by the Miami River basin to the northwest, the Little Miami River basin to the east, and the Ohio River to the south. In the lower portion of the basin, valley walls are steep, rising 200 to 300 feet above the valley floor. Major tributaries within the Mill Creek basin include East Fork Mill Creek, Sharon Creek, Cooper Creek, and West Fork Mill Creek. These tributaries enter Mill Creek at Stations 1961+50, 1834+50, 1747+50, and 1617+00, respectively, with drainage areas of 9.4, 10.5, 6.5, and 36.4 square miles at their mouths. Table 5.1.1 lists drainage areas at various locations along Mill Creek.

TABLE 5.1.1
Mill Creek Basin Drainage Areas

Location	Station	Drainage Area (Sq Miles)
Barrier Dam	1024+00	159
Mitchell Avenue	1318+30	132
Center Hill Road	1422+10	121
Carthage USGS	1557+80	115
Reading USGS	1667+00	73
Glendale Milford Road	1822+00	61
Sharon Road	1886+30	50
Confluence with East Fork	1961+50	42

The lower segment of the Mill Creek floodplain, located primarily in the confines of the City of Cincinnati and surrounding municipalities, is urban in character and is almost totally developed (see Figure 5.1.1). The development consists of a mixture of industry and transportation ranging from light to heavy commercial establishments, including small proprietorships and large corporations. Properties are a combination of commercial and residential. Transportation facilities, including roads, streets, interstate highways, rail track and spur lines, and extensive railroad yards crisscross the area. The upper portion of the watershed in

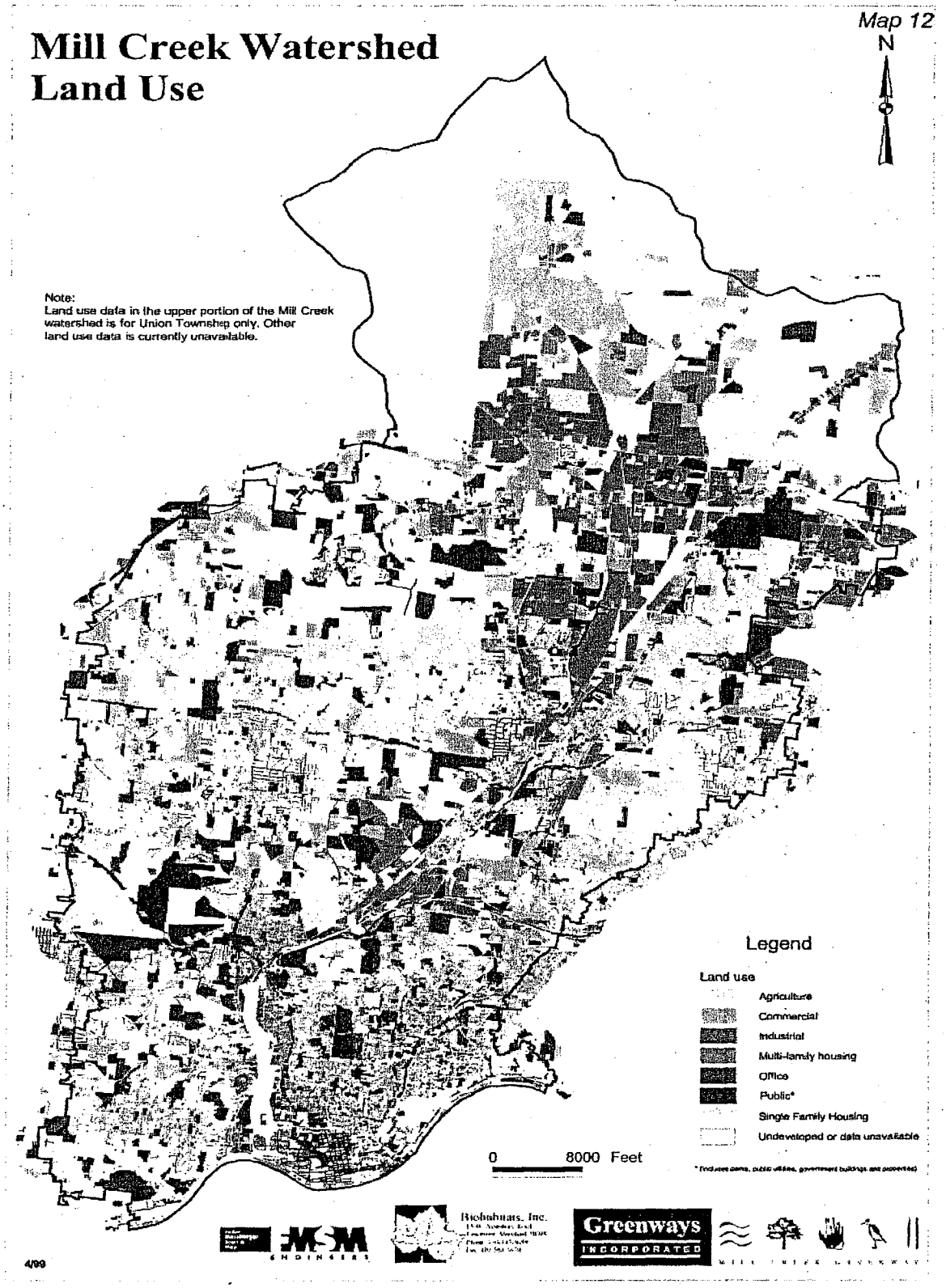

Figure 5.1.1 Mill Creek Watershed Land Use

Butler County is more rural. However, industrial development within the flood plain is starting to occur.

As noted in Section 4.1, channel improvements were constructed along various sections of Mill Creek between 1980 and 1991, to provide protection against Mill Creek headwater flooding in Hamilton County. The design/construction job was so large that the work was divided geographically in "Sections" numbered section 1 (starting at the Western Hills Ave. viaduct) upstream to Section 7 (ending at the Butler Co. line). Later, some of the sections were subdivided: Section 7 was subdivided into Sections 7A, 7B and 7C; and Section 4 was subdivided into 4A and 4B. Finally, the portion of Mill Creek between the barrier dam and Western Hills Ave. was named "Section 8" (although this number is geographically out-of-sequence with the others), resulting in a total of 11 sections. These section names are still being used to refer to portions of the mainstem. A description of each section and the associated construction schedules are provided in Table 5.1.2.

TABLE 5.1.2
Description and Location of Mill Creek Channel Sections

Section	Description	Stream Station	Status
8	Barrier Dam to Western Hills Avenue extends from the barrier dam on the downstream end to Western Hills Viaduct on the upstream end. Total length is approximately 1.5 miles.	102100 to 109980	Not complete
1	Western Hills Avenue to Hopple Street took five years to complete - awarded in August 1989, and completed December 1994. Total length of this section is approximately 1 mile.	109980 to 115000	Complete
2	Hopple Street to Upstream of intersection of Dooley By-pass and Spring Grove Road. This section consists of approximately 2.25 miles of channel improvement extending from just below Hopple Street on the downstream end to Section 3 at Salway Park on the upstream end. Construction of Section 2 began in June 1984. Completion of Section 2 was delayed due to a slide that occurred during construction along I-75 at Ludlow Avenue between Stations 1224+00 and 1232+00. Construction of a wall, designed and constructed to contain the slide area, was awarded by separate contract in November of 1988. Construction of the wall and Section 2 were completed in December 1989.	115000 to 125300	Complete
3	Upstream of intersection of Dooley By-pass and Spring Grove Avenue to Chessie R/R Bridge. Construction of Section 3 began in March 1982 and consists of approximately 1.5 miles of channel improvement extending from Salway Park on the downstream end to the CSX-Transportation Bridge upstream from Mitchell Avenue.	125300 to 134310	Complete
4A	Chessie R/R Bridge to Center Hill Road. This section is approximately 1.5 miles in length, extending from Section 3 at the downstream end to Center Hill Avenue on the upstream end. Construction began in spring 1986.	134310 to 142230	Complete
4B	Section 4B extends from Center Hill Avenue on the downstream end to Vine Street on the upstream end. Total length is approximately 2 miles.	153675 to	Not Complete
5	Section 5 extends from Vine Street on the downstream end to just below Galbraith Road on the upstream end. As part of the Cross County Highway Project, the Ohio Department of Transportation has paved the portion of this section from Station 1576+50 to the end at Station 1607+00 with 8-inch concrete on the bottom and side slopes. Also, a section on the downstream end from Station 1532+00 to Station 1544+00 has been constructed as an earth channel by the State of Ohio under the Cross County Highway Contract. Section 5 has a total length of approximately 1.5 miles.	153675 to 16170	Partially Complete

Section	Description	Stream Station	Status
6	West Fork Mill Creek to Glendale Milford Road extends just downstream from Galbraith Road on the downstream end to Formica Drive on the upstream end. Total length is approximately 3 miles.	161700 to 182255	Not Complete
7B	Glendale Milford Road to Sharon Road extends from Formica Drive on the downstream end to 700 feet north of Sharon Road on the upstream end. No final design work has been done on this section. Total length is approximately 2 miles.	182255 to 188690	Not Complete
7A	Sharon Road to I-275 Construction began on Section 7A in 1981 because of a readily available ROW. To prevent induced flooding downstream of the section, the new channel grade was left approximately 3-4 feet above the final channel grade. Section 7A will be excavated to final grade after all other channel work downstream is completed. No additional ROW is required. Section 7A is the last flood control activity to be accomplished, to be followed by final cleanup. Final cleanup will remove approximately 3 feet of channel grade to the final channel grade and clean up all sections when construction has been completed.	188690 to 195580	Partially Complete
7C	Added after the initial study began. This section runs from I-275 to Hamilton County Line. Total length is less than one mile.	195580 to 200100	Not Complete

Note: Length of study area is 18.56 miles.

5.1.1 Climate

The Metro Cincinnati area has a temperate climate with relatively cold winters and hot, humid summers. The mean annual temperature is 53.9 degrees F, with extremes ranging from about 25 degrees below zero to slightly greater than 100 degrees. Average monthly temperatures range from about 76 degrees F in July to about 30 degrees F in January. Table 5.1.3 shows average monthly temperatures for the Metro Cincinnati area. All seasons are marked by weather changes that come from passing weather fronts and associated centers of high and low pressure.

TABLE 5.1.3
Mean Monthly Temperature (^{O}F)
Cincinnati/Northern Kentucky International Airport
52 Years (1948-1999)

Jan	29.8	Jul	75.7
Feb	33.3	Aug	74.1
Mar	42.2	Sept	67.3
Apr	53.3	Oct	57.7
May	63.2	Nov	43.9
Jun	71.1	Dec	34.1
Annual	**53.9**		

5.1.2 Precipitation

Precipitation in the Cincinnati area is fairly well distributed throughout the year. The annual precipitation averages about 41 inches. The monthly average ranges from 2.65 inches in September to 4.15 inches in May. Table 5.1.4 gives monthly rainfall amounts for the period of record for the Weather Station Office (WSO) located at Cincinnati/Northern Kentucky International Airport. Because of the limited amount and duration of snowfall, snowmelt generally does not contribute significantly to runoff for the Mill Creek basin. Rainfall, which occurs in this basin or parts of this basin, does not necessarily occur in surrounding basins.

TABLE 5.1.4
Mean Monthly Precipitation (inches)
Cincinnati/Northern Kentucky International Airport
(1948-1999)

Jan	3.24	Jul	3.99
Feb	2.84	Aug	3.24
Mar	3.93	Sept	2.65
Apr	3.76	Oct	2.66
May	4.15	Nov	3.23
Jun	4.06	Dec	3.14
	Annual	**40.89**	

5.2 EXISTING FLOOD CONTROL MEASURES

5.2.1 Barrier Dam

Located near the mouth of Mill Creek is the Mill Creek Barrier Dam and Pump Station (see Photo # 24 in Appendix III). The dam and pump station was built in the early 1940's as part of the Cincinnati Local Flood Protection Project. The Barrier Dam was designed to protect Mill Creek from backwater flooding from the Ohio River. The gates of the dam are closed only during flood events along the Ohio River. The pump station was designed to pump high flows from Mill Creek into the Ohio River. Features of the Barrier Dam include:

- A large pumphouse including 6 pumps;
- 1,420 feet of levee and concrete wall between the western abutment of the dam and pump house;
- 5,660 feet of concrete wall to form the eastern closure of the dam.

As part of the Mill Creek Local Protection Project, two additional pumps were added to the Barrier Dam in 1991, making a total of eight with a total capacity varying from 12,400 cfs against a 27.5-foot head to 14,400 cfs at a 5-foot head to the Ohio River.

Comparisons of historical Mill Creek discharge hydrographs at the barrier dam with Ohio River elevation hydrographs at the confluence with Mill Creek were made from water year 1941

to present, including the March 1933 flood event. The March 1933 flood was considered to be approximately equal to the 1% chance ("100-year") flood. Discharge hydrographs at the mouth were obtained from the USGS gaging station discharge data at Carthage and at Reading, and transposed to the mouth by application of a drainage area factor to account for the increased drainage area associated flows. The elevation hydrographs of the Ohio River were obtained from the gaging station in Cincinnati (mile 471.0) transposed to the confluence with Mill Creek. Generally, because of the large difference in drainage area between Mill Creek and the Ohio River, Mill Creek peak flows had already passed through the barrier dam before the Ohio River reached a stage (52 feet) when the gates of the barrier dam would be closed. If the peaks were coincident, the Ohio River never reached this stage with the exception of the March 1933 and March 1945 floods. For these flood events, peak flows of over 17,000 and 16,000 cfs on Mill Creek occurred after the closure of the gates. These floods were studied in detail in 1984 with the design data and results shown in the USACE publication, Design Memorandum No. 6, Barrier Dam Pumps, dated August 1984. For these two coincident floods, a modified pulse storage routing was performed utilizing available storage above the dam site. The maximum interior ponding elevations that would be reached for both floods were slightly less than 479 feet mean sea level (MSL) with the pumps in operation, an elevation that would not cause damage. As stated earlier, an analysis of coincident Mill Creek and Ohio River flooding indicated that the March 1933 flood was equal to a 1% chance flood event.

5.2.2 Private Levees

Several private levees have been constructed throughout the years to prevent or lessen flood damages to industries along the stream. Many of these private levees are located between Glendale-Milford Road and Kemper Road. Industries protected by these levees include Ford Motor Company transmission plant, the General Electric jet engine plant, Aero Blast, Sysco food distributors, General Mills cereal plant, a site previously known as Astro Containers, and other smaller industries. Ford, Aero Blast, and General Mills are all located in Section 7A while the previous Astro Containers and Sysco are in Section 7B. General Electric is located in Section 6.

5.3 SOCIO-ECONOMIC CHARACTERISTICS

Table 5.3.1 provides selected population characteristics for Hamilton County and the State of Ohio. In 2000, the population of Hamilton County was 845,303, which was an 8.5% decrease from 1970 when the Mill Creek, Ohio, Flood Control Project began. The 2000 population density of Hamilton County was 2075.1 persons per square mile, indicating that Hamilton County is a densely populated area.

TABLE 5.3.1
Socio-Economic Characteristics

Characteristic	Hamilton County	Ohio
Population, 2000	845,303	11,353,140
Population, 1970	924,018	10,657,423
Land area (square miles), 2000	407	40,948
Persons per square mile, 2000	2,075.1	277.3
Unemployment rate, 2000	3.5%	4.1%
Poverty rate, 1999	11.8%	10.6%
Median household money income, 1999	$40,964	$40,956
Per capita money income, 1999	$24,053	$21,003
Median value of owner-occupied housing units, 2000	$111,400	$103,700
Households, 2000	346,790	4,445,773
Housing units, 2000	373,393	4,783,051
Homeownership rate, 2000	59.9%	69.1%
Persons per household, 2000	2.38	2.49

Source: U.S. Census Bureau, 2000 Census

Table 5.3.1 also presents the most recent Census Bureau data for income and poverty levels for Hamilton County and the State of Ohio. The 1999 Census revealed that the per capita income was $24,953 for Hamilton County, and $21,003 for the State of Ohio. The poverty rate was 11.8% for Hamilton County and 10.6% for the State. In addition, Table 5.3.1 provides information regarding the general housing characteristics of the project area.

The 2000 Census showed that the racial composition of the project area was predominantly white. In comparison to the State of Ohio, Hamilton County has a higher minority population. Table 5.3.2 shows the racial composition of Hamilton County compared to the State of Ohio.

TABLE 5.3.2
Population Breakdown by Race

RACE	Hamilton County		Ohio	
	Number	Percent	Number	Percent
One race	834,174	98.7	11,195,255	98.6
White	616,487	72.9	9,645,453	85.0
Black or African American	198,061	23.4	1,301,307	11.5
American Indian and Alaska Native	1,481	0.2	24,486	0.2
Asian	13,602	1.6	132,633	1.2
Native Hawaiian and Other Pacific Islander	242	0.0	2,749	0.0
Some other race	4,301	0.5	88,627	0.8
Two or more races	11,129	1.3	157,885	1.4

Source: U.S. Census Bureau, 2000 Census

Table 5.3.3 describes the composition of the labor market in Hamilton County and the State of Ohio by employment categories. Hamilton County and the State of Ohio are similar in percentage for health and social services (20.8% and 19.7% respectively), which make up a large percentage of employment. The State of Ohio has a higher percentage of employment in manufacturing than does Hamilton County, whereas Hamilton County has a higher percentage of employment for the other service-related categories. The remaining employment categories are similar for Hamilton County and the State of Ohio. Hamilton County is highly developed, as indicated by the low percentage of employment in the agricultural field.

TABLE 5.3.3
Labor Market

INDUSTRY	Hamilton County		Ohio	
	Number	Percent	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	531	0.1	57,518	1.1
Construction	22,526	5.6	324,553	6.0
Manufacturing	58,732	14.5	1,082,185	20.0
Wholesale trade	15,352	3.8	193,219	3.6
Retail trade	46,163	11.4	643,058	11.9
Transportation and warehousing, and utilities	18,940	4.7	267,324	4.9
Information	11,238	2.8	128,081	2.4
Finance, insurance, real estate, and rental and leasing	31,848	7.9	339,090	6.3
Professional, scientific, management, administrative, waste services	46,407	11.5	434,694	8.0
Educational, health and social services	84,099	20.8	1,064,882	19.7
Arts, entertainment, recreation, accommodation and food services	34,716	8.6	403,684	7.5
Other services (except public administration)	18,570	4.6	242,149	4.5
Public administration	16,070	4.0	221,738	4.1

Source: U.S. Census Bureau, 2000 Census

5.4 NATURAL RESOURCES

As stated in Section 5.1, Hamilton County, Ohio, is a highly developed, urbanized area. Residential and industrial development within the City of Cincinnati dominates the area, but some pockets of woodland areas are left untouched due to severe topography. The pattern of development in Hamilton County has been influenced by major streams that flow through the area. A narrow strip of riparian habitat exists on either side of the Mill Creek where stream modifications have not been made. The extent of this habitat is severely limited by surrounding industrial, residential, and commercial development.

The U.S. Fish and Wildlife Service (USFWS) disclosed that the project area was within range of the Indiana bat (*Myotis sodalis*) and running buffalo clover *(Trifolium stoloniferum).* Both are federally listed endangered species. Live and dead trees and snags along riparian corridors, especially those with exfoliating bark or cavities for potential roost areas, are of importance to the habitat of the Indiana bat. The study area was also found to lie within the range of the federally listed threatened bald eagle (*Haliateetus leucocephalus*).

Upon examination of quadrangle maps provided by the USGS, the Ohio Department of Natural Resources (ODNR) identified other species and areas that could be of concern. The

ODNR identified the presence of the threatened passion-flower (*Passiflora incarnata)* and the Rock Elm Ohio Champion Big Tree. They also identified an Oak Maple Forest Plant Community as well as a Mixed Mesophytic Forest Plant Community. These communities are located outside the immediate study area. No other state nature preserves or scenic rivers were acknowledged to be in the area.

The study area is known to contain narrow strips of jurisdictional wetland habitat along the banks of Mill Creek. These wetland areas include sites classified as palustrine emergent, scrub/shrub, and deciduous broadleaved forested wetland areas. Small, isolated areas of other wetland types exist in the area but are located well outside the proximity of the study area.

5.5 CULTURAL RESOURCES

Segments designated for construction within the study area were identified for historical significance. Sections 2, 4B, 5, and 6 contained two historic sites. One site is a pair of bridge abutments located on both banks of Mill Creek about 1,800 feet south of Seymour Road. The other site is a historic foundation with associated artifact scatter.

Section 7A contained no cultural resources or sites. By contrast Section 7B contained one historic site and three prehistoric sites. The historic site is a limestone and cinder block foundation with nearby coal and coal piles. The three prehistoric sites were small prehistoric lithic scatters and flakes.

Section 7C enclosed two potential historic resource sites. One site is a bridge abutment and the other site is a bridge near the East Fork. These sites are thought to be related. They are badly deteriorated and likely to have limited historic resources.

5.6 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW) SITES

The main stem of the Mill Creek Valley has been used for industrial purposes for over 150 years. As a direct result of this longstanding industrial usage, the potential for encountering hazardous materials and contaminated sites along its banks is high.

An HTRW inventory of the study area was completed between 1998 and 2001. Soil borings were conducted to indicate the presence of anthropomorphic materials commonly associated with hazardous substances. In order to screen flood damage reduction alternatives, it was necessary to consider what soil might be disturbed and what soil disposal might be required for each alternative. Sites containing, or potentially containing, HTRW[2] materials were

[2] As used in US Army Corps of Engineers Regulation ER 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects, the term "hazardous, toxic, and radioactive waste", or "HTRW", means any material listed as a "hazardous substance" under the Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. §9601 et seq. (CERCLA). Hazardous substances regulated under CERCLA include "hazardous wastes" under Sec. 3001 of the Resource Conservation and Recovery Act, 42 U.S.C. 6921 et seq; "hazardous substances" identified under Section 311 of the Clean Air Act, 33 U.S.C. 1321, "toxic pollutants" designated under Section 307 of the Clean Water Act, 33 U.S.C. 1317, "hazardous air pollutants" designated under Section 112 of the Clean Air Act, 42 U.S.C. 7412; and "imminently hazardous chemical substances or mixtures" which Environment Protection Agency (EPA) has regulated under Section 7 of the Toxic Substance Control Act, 15 U.S.C. 2606.